

# Dual-Use Research of Concern Risk Assessments: Oversight Systems and Responsible Science

30 November 2021

1-3pm SAST

Academy of Science of South Africa (ASSAf)

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**Dr. Wilmot James**

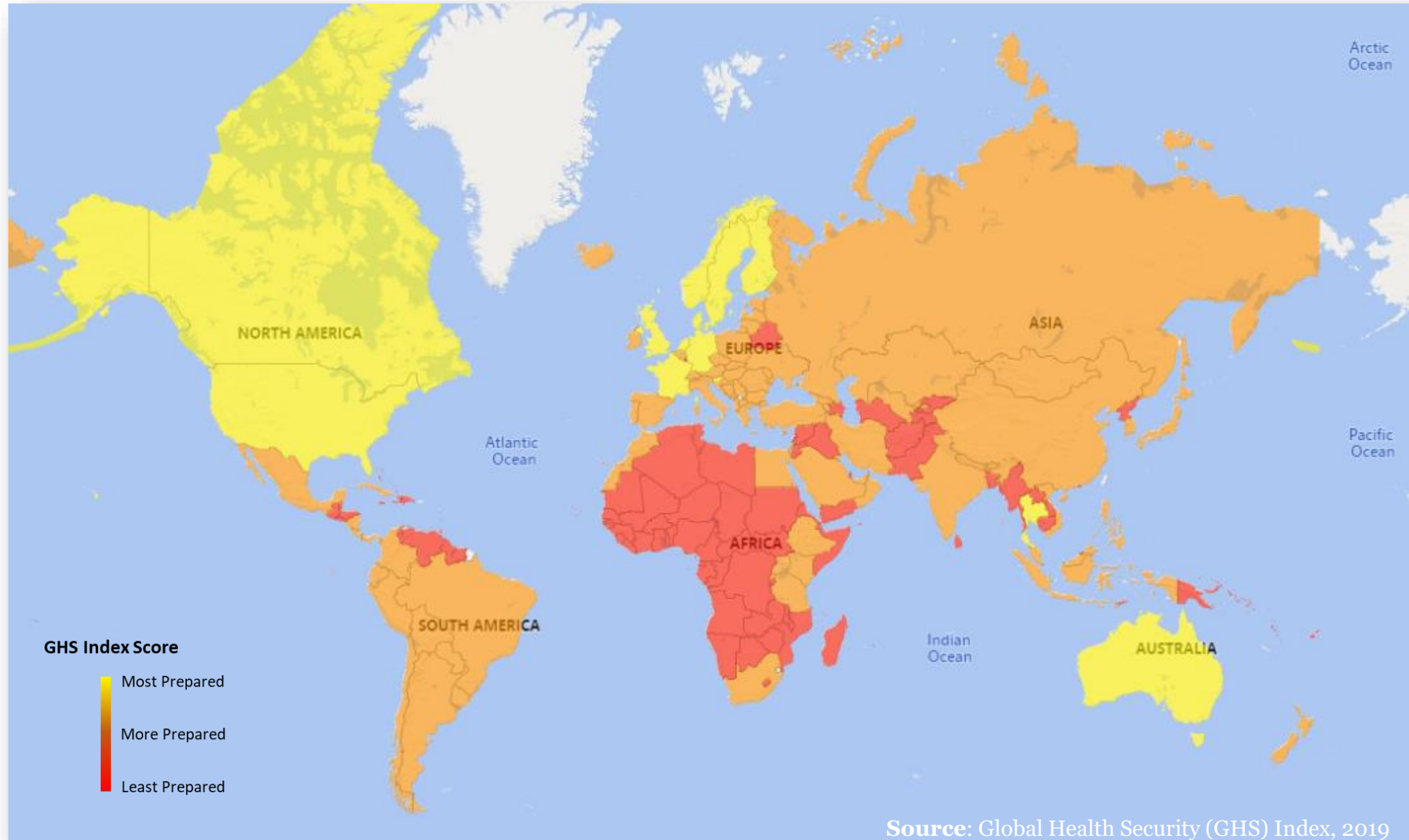
Senior Research Scholar  
Columbia University

Senior Consultant Biosecurity to the Nuclear Threat Initiative  
Co-Chair National Frameworks G7 led Global Partnership Africa-CDC Signature Initiative on Biosecurity

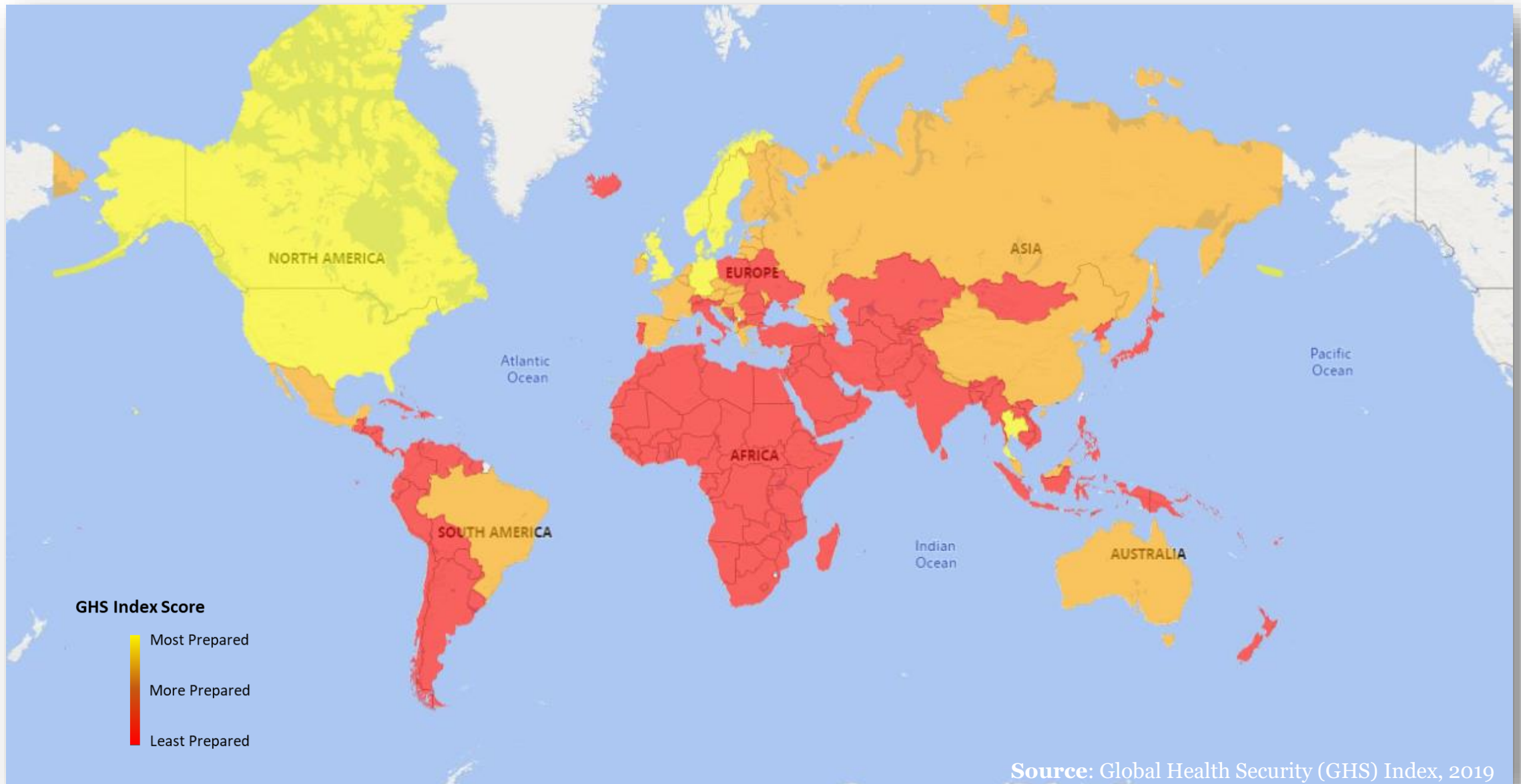
Recipient of educational grant from the Pfizer Corporation  
Convenor of the *Symposium on Vaccines and Global Health*, Program in Vaccine Education, Vagelos College of Physicians and Surgeons, Columbia University March 28  
– April 1 2022



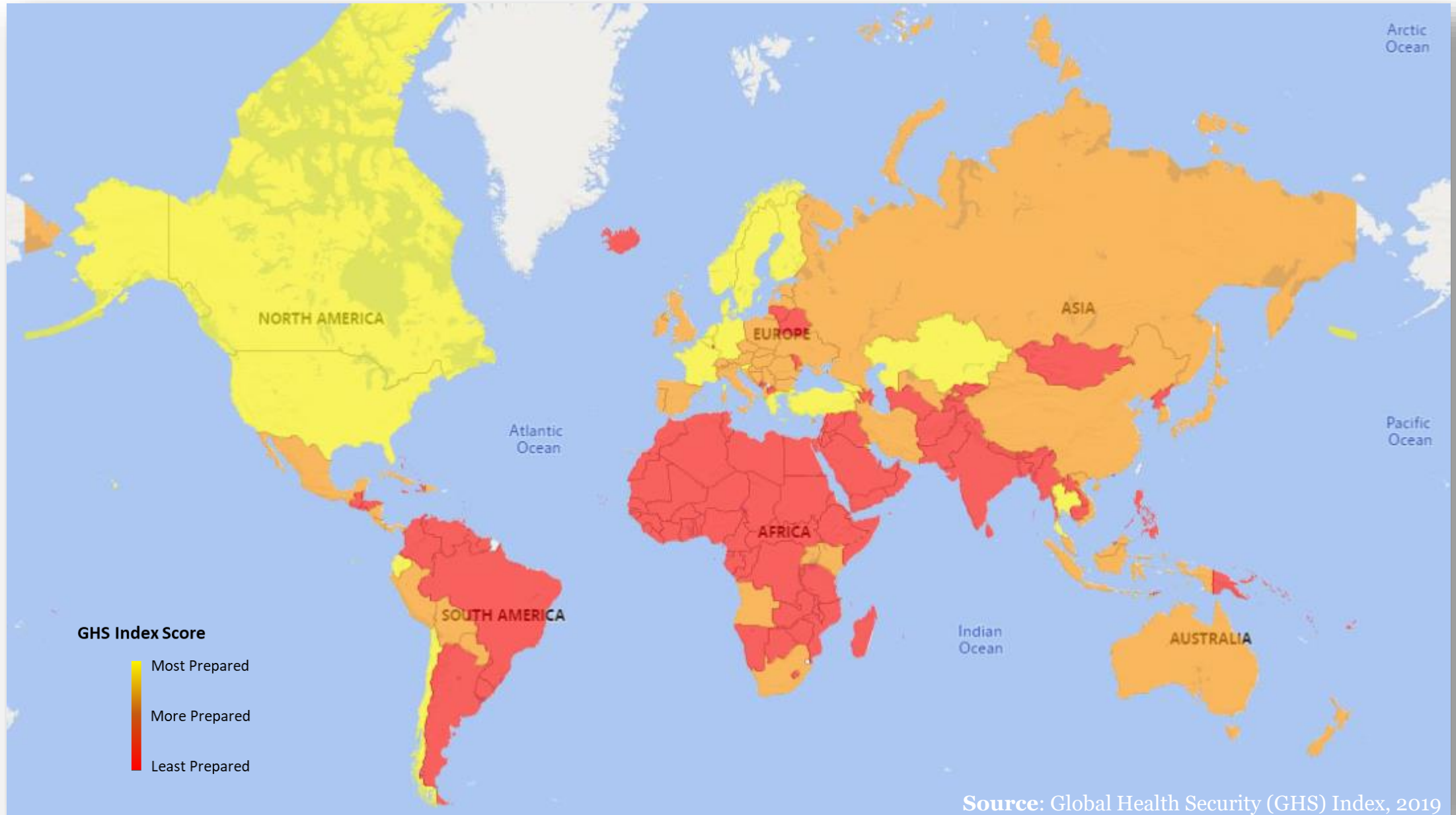
# Preparedness for the Emergence or Release of Pathogens



# Biosecurity

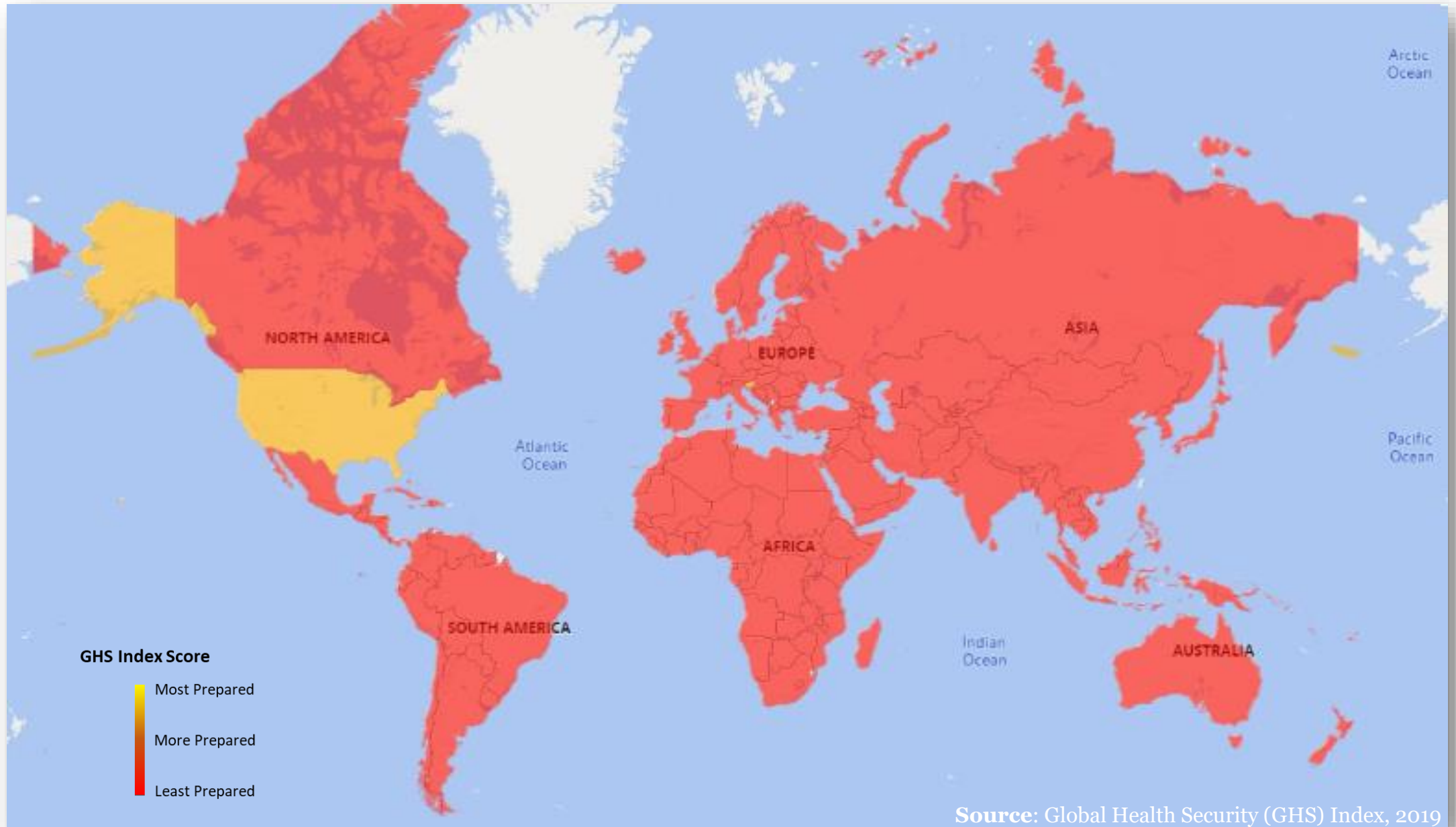


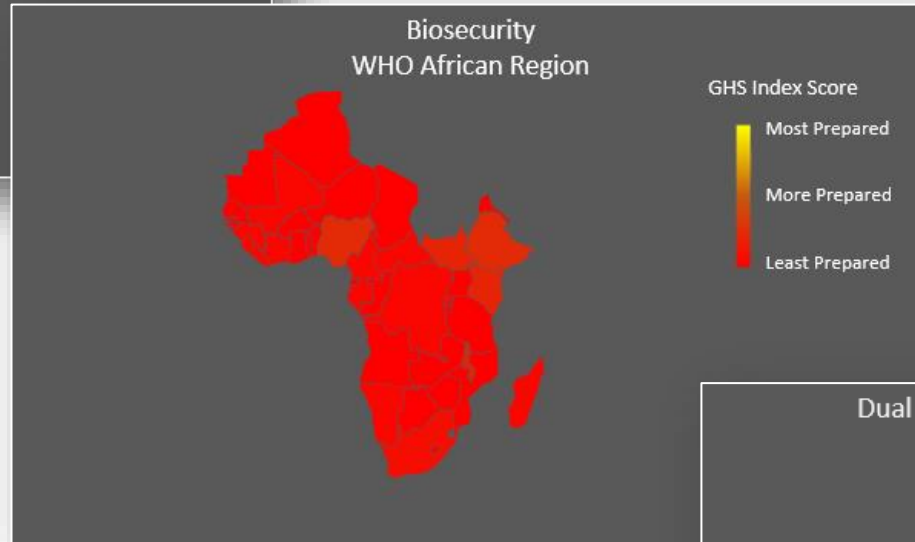
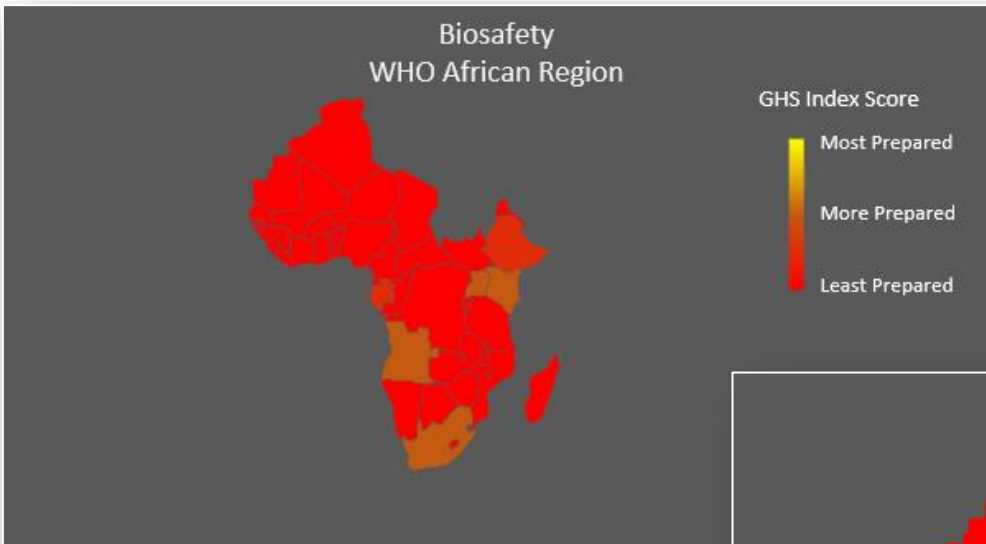
# Biosafety





# Dual-Use Research and Culture of Responsible Science





# WHO African Region

# South Africa

**54.8** Index Score

**34/195**



**PREVENT**



**DETECT**



**RESPOND**



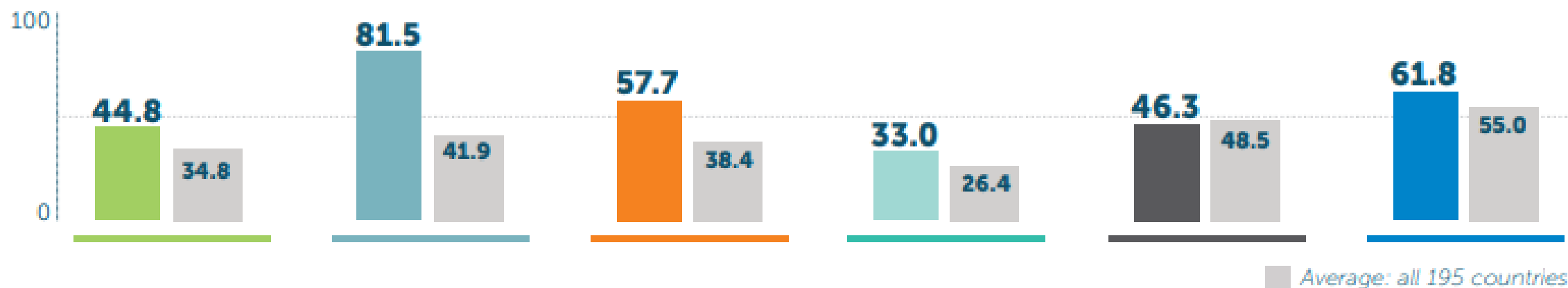
**HEALTH**



**NORMS**



**RISK**





PREVENT



DETECT



RESPOND



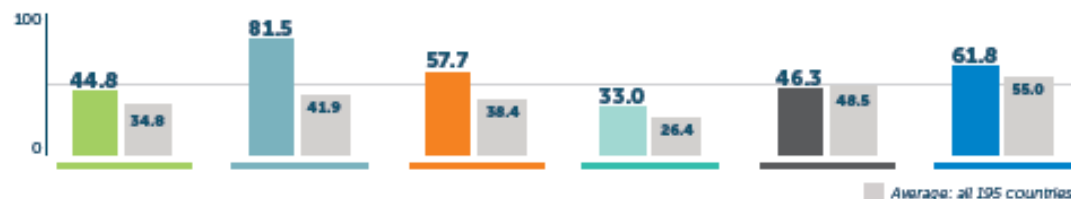
HEALTH



NORMS



RISK



Average: all 195 countries

	COUNTRY SCORE	AVERAGE SCORE*		COUNTRY SCORE	AVERAGE SCORE*
<b>PREVENTION</b>	<b>44.8</b>	<b>34.8</b>	<b>HEALTH SYSTEM</b>	<b>33.0</b>	<b>26.4</b>
Antimicrobial resistance (AMR)	58.3	42.4	Health capacity in clinics, hospitals and community care centers	52.6	24.4
Zoonotic disease	53.9	27.1	Medical countermeasures and personnel deployment	33.3	21.2
Biosecurity	8	16.0	Healthcare access	48.8	38.4
Biosafety	50	22.8	Communications with healthcare workers during a public health emergency	0	15.1
Dual-use research and culture of responsible science	0	1.7	Infection control practices and availability of equipment	0	20.8
Immunization	84.2	85.0	Capacity to test and approve new medical countermeasures	75	42.2
<b>DETECTION AND REPORTING</b>	<b>81.5</b>	<b>41.9</b>	<b>COMPLIANCE WITH INTERNATIONAL NORMS</b>	<b>46.3</b>	<b>48.5</b>
Laboratory systems	100	54.4	IHR reporting compliance and disaster risk reduction	50	62.3
Real-time surveillance and reporting	78.3	39.1	Cross-border agreements on public and animal health emergency response	50	54.4
Epidemiology workforce	50	42.3	International commitments	50	53.4
Data integration between human/animal/environmental health sectors	100	29.7	JEE and PVS	50	17.7
<b>RAPID RESPONSE</b>	<b>57.7</b>	<b>38.4</b>	Financing	16.7	36.4
Emergency preparedness and response planning	0	16.9	Commitment to sharing of genetic & biological data & specimens	66.7	68.1
Exercising response plans	0	16.2	<b>RISK ENVIRONMENT</b>	<b>61.8</b>	<b>55.0</b>
Emergency response operation	33.3	23.6	Political and security risks	78.6	60.4
Linking public health and security authorities	100	22.6	Socio-economic resilience	76.6	66.1
Risk communication	100	39.4	Infrastructure adequacy	58.3	49.0
Access to communications infrastructure	86	72.7	Environmental risks	56.9	52.9
Trade and travel restrictions	100	97.4	Public health vulnerabilities	38.3	46.9

\*Average: all 195 countries

Scores are normalized (0-100, where 100 = most favorable)



## South Africa

### Overall Score

54.8

### Biosecurity

8

#### Whole-of-government biosecurity systems

40

Updated national records of especially dangerous pathogen/toxin inventories

0

Biosecurity laws on facility security for especially dangerous pathogens

0

Agency for enforcement of biosecurity laws/regulations

0

Consolidation of especially dangerous pathogens into minimum # of facilities

100

Capacity to conduct tests for anthrax/Ebola without culturing live pathogens

100

#### Biosecurity training and practices

0

Biosecurity training using a standardized, required approach

0

#### Personnel vetting: regulating access to sensitive locations

0

Personnel checks for permission to access especially dangerous pathogens

0

#### Transportation security

0

National transport of regulations for Category A and B infectious substances

0

#### Cross-border transfer and end-user screening

0

Laws/regulations on cross-border transfer and end-user screening

0

### Biosafety

50

#### Whole-of-government biosafety systems

100

Biosafety laws/regulations

100

Agency for enforcement of biosafety laws/regulations

100

#### Biosafety training and practices

0

Biosafety training using a standardized, required approach

0

### Dual use research and culture of responsible science

0

#### Oversight of dual use research

0

Evidence of national assessment of dual use research

0

National law/regulation on oversight of dual use research

0

Existence of agency responsible for oversight of dual use research

0

#### Screening requirements for providers of genetic material

0

Requirement to screen synthesized DNA against list prior to sale

0

## Biosecurity: Top-Tier Countries (scores between 66.7-100)

Denmark – 89.5

United States – 89.5

Canada – 82.7

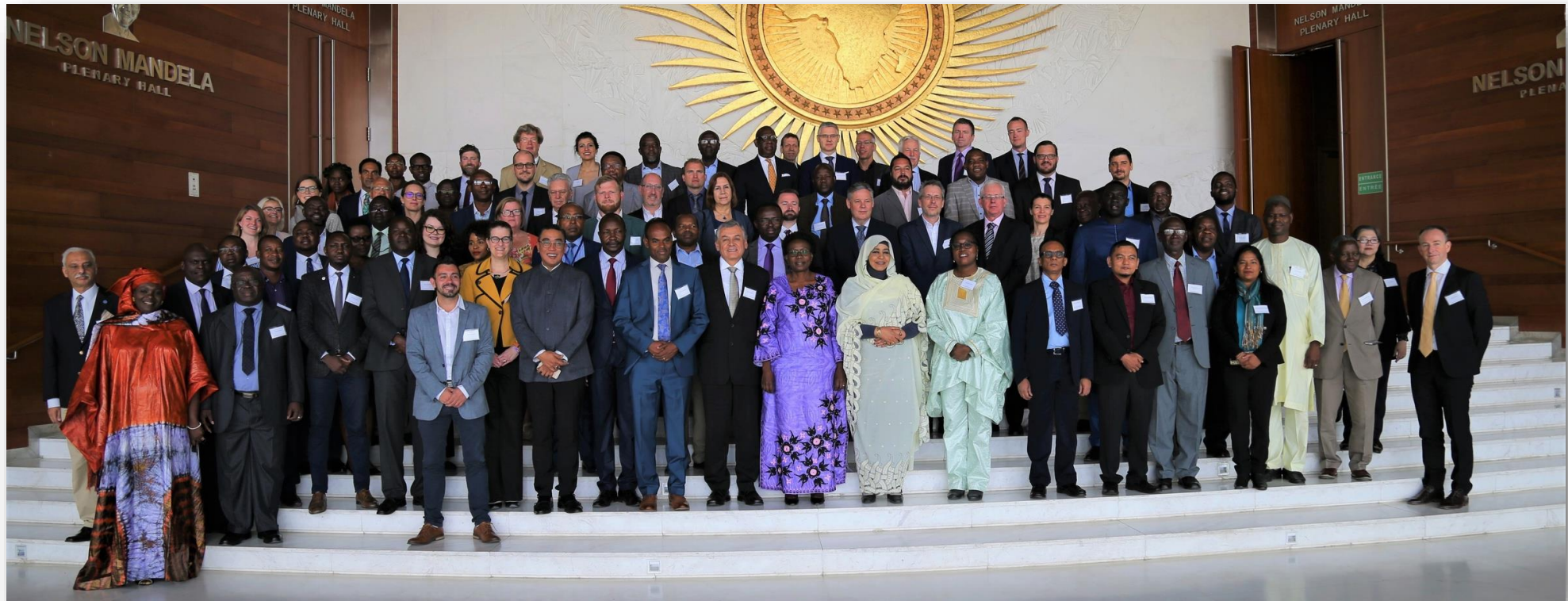
Germany – 74.7

Norway – 72.0

Sweden – 72.0

Thailand – 69.3

United Kingdom – 69.3



## NTI Convenes Global Biosecurity Dialogue in Addis Ababa, Partners with African Union to Launch Africa CDC Initiative to Strengthen Biosecurity and Biosafety

<https://www.nti.org/newsroom/news/nti-convenes-global-biosecurity-dialogue-addis-ababa-partners-african-union-launch-africa-centres-disease-control-and-prevention-initiative-strengthen-biosecurity-and-biosafety/>

# Lack of Global Norms and Governance Tools

- At a time of constant change in the field, there are insufficient international norms and governance tools that can allow the life sciences to flourish while protecting against deliberate abuse or accidental misuse.
- *NEED:* Stronger norms and tools at risk reduction points throughout bioscience research and biotechnology development life-cycle. Layered defense.

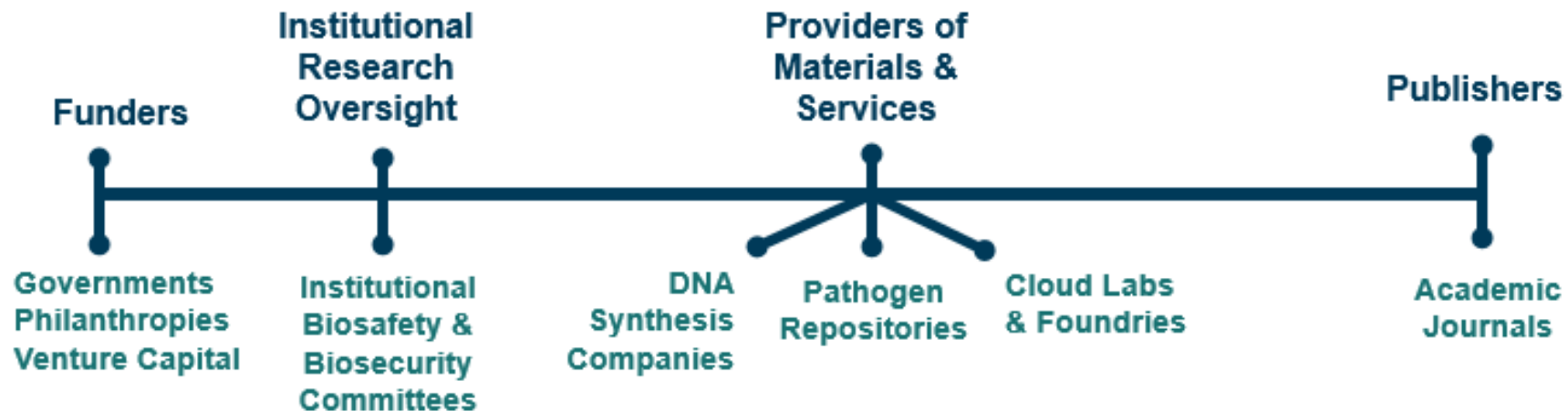


Image: NTI | bio Biosecurity Innovation and Risk Reduction Initiative



THANK YOU!

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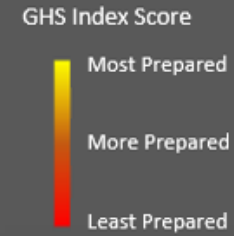
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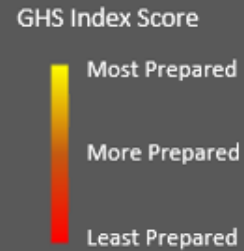
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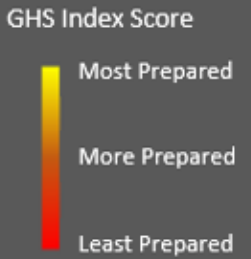
Biosecurity  
Southern Africa Regional Collaborating Centre



Dual Use Research and Culture of Responsible Science  
Southern Africa Regional Collaborating Centre



Biosafety  
Southern Africa Regional Collaborating Centre

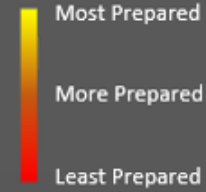


# Southern Africa RCC



Biosafety  
Western Africa Regional Collaborating Centre

GHS Index Score



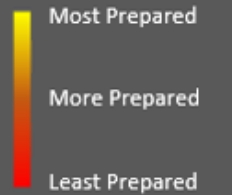
Dual Use Research and Culture of Responsible Science  
Western Africa Regional Collaborating Centre

GHS Index Score



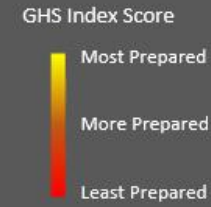
Biosecurity  
Western Africa Regional Collaborating Centre

GHS Index Score

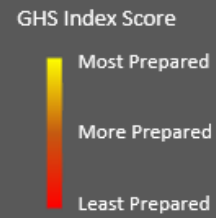


# Western Africa RCC

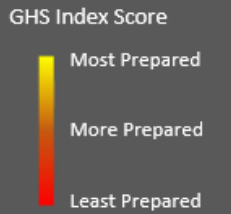
Biosecurity  
Central Africa Regional Collaborating Centre



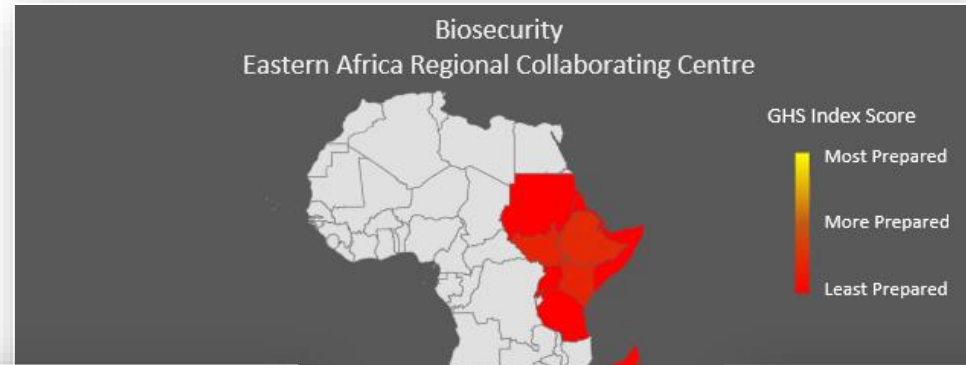
Dual-Use Research and Culture of Responsible Science  
Central Africa Regional Collaborating Centre



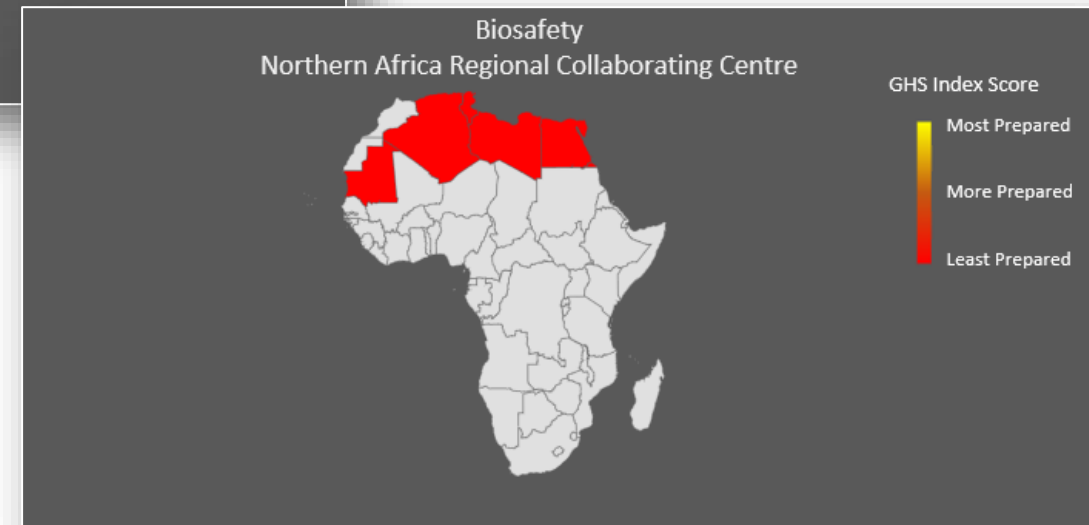
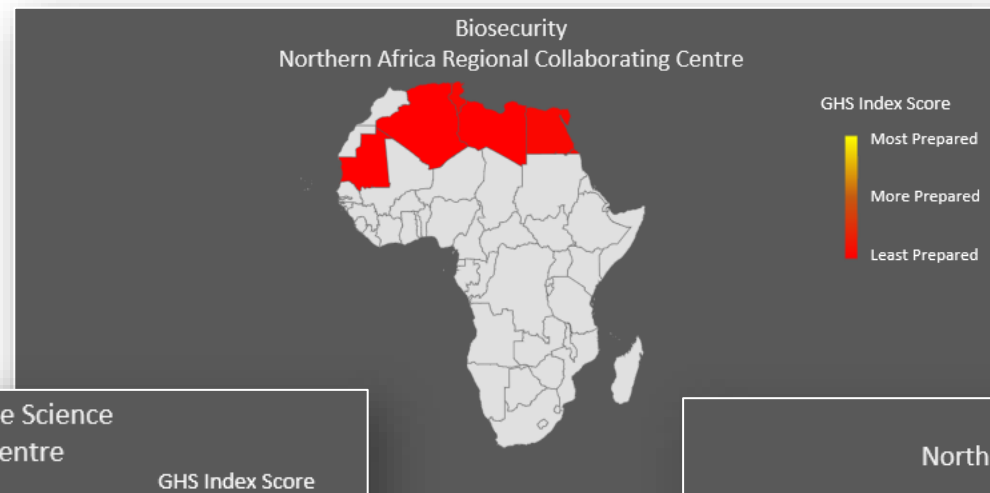
Biosafety  
Central Africa Regional Collaborating Centre



# Central Africa RCC



# Eastern Africa RCC



# Northern Africa RCC

**Academy of Science of South Africa (ASSAf)**

**ASSAf Research Repository**

**<http://research.assaf.org.za/>**

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B. Academy of Science of South Africa (ASSAf) Events

I. Other

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2021

# Dual-Use Research of Concern

**Academy of Science of South Africa (ASSAf)**

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Academy of Science of South Africa (ASSAf), (2021). Dual-Use Research of Concern.

[Online] Available at: <http://hdl.handle.net/20.500.11911/227>

[https://youtu.be/\\_5EBgeEQDUY](https://youtu.be/_5EBgeEQDUY)

*Downloaded from ASSAf Research Repository, Academy of Science of South Africa (ASSAf)*